



## Long term conditions

# Exploring physiotherapists' experiences in delivering care remotely to adults with Cystic Fibrosis during the COVID-19 pandemic in the United Kingdom

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### Background

The COVID-19 pandemic resulted in a rapid change in physiotherapy service delivery for people with cystic fibrosis (CF), with the transition from face-to-face to remote provision. Experiences of physiotherapists working in CF at this time have not yet been reported.

### Aim

To gain an insight into physiotherapists' experiences of delivering remote care to people with CF during COVID-19 and to consider how this may influence future care for people with CF.

### Research question

What are physiotherapists' experiences in delivering care remotely to adults with CF during the COVID-19 pandemic in the United Kingdom?

### Methodology

Qualitative, interpretive methodology was used to collect data via semi-structured interviews with three participants. Participants were recruited from across the United Kingdom (UK) via the professional networks. Interviews were completed on-line and were digitally recorded and transcribed verbatim. Respondent validation was completed prior to using Thematic Analysis.

### Results

Participants had a mean of 20 years of experience working with adults with CF. Three main themes were identified (1) Delivering care in the pandemic; (2) Impact of pandemic on physiotherapists; (3) Post-pandemic future planning. Sub-themes were presented within these and supported by participant quotations.

### Conclusion and Implications for practice

Physiotherapists working during the COVID-19 pandemic treating patients with CF experienced rapid changes to service delivery. Significant findings included the importance of a hybrid clinic, patient education and the need to screen patients for appropriateness of either virtual or in-person reviews. Areas suggested for future research include the use of remote assessment tools and the use of hybrid clinics.

## INTRODUCTION

Control measures during the COVID-19 pandemic resulted in patients with chronic diseases and clinically extremely vulnerable populations, including those with Cystic Fibrosis (CF), needing to shield.<sup>1</sup> Physiotherapy for patients with CF is a mainstay of condition management.<sup>2,3</sup> During the pandemic, National Institute for Health and Care Excellence (NICE) guidelines<sup>4</sup> were remodelled and emphasised moving from face-to-face to remote delivery of care. Sim-

ilarly, a publication on behalf of the European Cystic Fibrosis Society published during the pandemic encouraged patients to maintain good adherence to treatments at this time.<sup>5</sup> The way that health care professionals were required to deliver care remotely during the pandemic resulted in different physiotherapy approaches to condition management through using online means, such as videos, or telephone consultations.<sup>6,7</sup>

The literature has focused on the perspectives of patients and caregivers, emphasizing mostly how this popu-

lation coped with the restriction measures, the impact on mental health or the benefits and limitations of remote delivery as part of their care.<sup>8,9</sup> There are only a few studies on physiotherapists' experiences in delivering care during this time, including their role in the COVID-19 ward<sup>10</sup> or physiotherapy in the intensive unit care (ICU).<sup>11</sup> Exploration of physiotherapists' experiences who worked remotely with patients with CF during the pandemic remains unrepresented in the literature.

This study aims to explore, from the physiotherapists' perspectives, the changes to the physiotherapy approach and the barriers, enablers and challenges that were encountered from working remotely with adults with CF during the pandemic, and to consider how this may influence future care.

The research question asks: *What are physiotherapists' experiences in delivering care remotely to adults with Cystic Fibrosis during the COVID-19 pandemic in the United Kingdom?*

## METHODS

### STUDY DESIGN

A qualitative method was used and underpinned by an interpretive approach, which recognises the subjectivity of the researcher and views this of great value and integral to the analysis process.<sup>12</sup> One-to-one interviews were identified as a suitable method of data collection to explore sensitive issues such as the impact of the COVID-19 pandemic and to provide in-depth information on the topic.<sup>13</sup> Completing the interviews via an online platform were primarily chosen due to infection control measures in place but had secondary benefits of being cost effective and to enable greater accessibility for researcher and participant, which would also support in data being collected from across the UK. Semi-structured interviews were used as this was considered the most appropriate method to obtain valuable information and disclose previous unknown issues.<sup>12</sup> An interview topic guide based on the findings of the literature was used to structure the semi-structured nature of the interviews.<sup>13</sup>

### PARTICIPANT SELECTION/RECRUITMENT

Participants were recruited via purposive sampling through the *Association of Chartered Physiotherapists in Respiratory Care* (ACPRC) using their social media channels. The names of people interested in participating were collated by the

supervisor and then given to the researcher. Inclusion and exclusion criteria of participants listed in [Table 1](#).

**Table 1. Inclusion and exclusion criteria**

Inclusion Criteria	Excluding Criteria
Experience of more than two years of working in the speciality of adult CF.	Unable to partake in data collection via online means.
HCPC registered and working in the UK during the pandemic with CF patients.	
English speaking.	

Mason (2010)<sup>14</sup> recommended that a small sample size with a maximum number of 15 participants can be appropriate when the interviews include a specialist group of people on a chosen topic. It was, however, not possible to aim to recruit 15 participants from the outset due to the limits of a MSc project and time/recourse constraints. A small size of participants was considered more realistic and feasible.

### DATA COLLECTION AND ANALYSIS

A pilot study was completed with one participant and as the questions did not need altering from the pilot to the main data collection, the data from the pilot study was included in analysis. In total, three participants were recruited and participated in this study.

The online interviews were completed using Zoom and Microsoft Teams from November 2020 to February 2021, with participants selecting their preferred platform. The duration of all interviews was between 30-60 minutes. Before the start of the interview participants were asked by the researcher if they consent to use the video function, to support in building rapport.<sup>15</sup> Only the audio file was kept for data analysis to uphold confidentiality.<sup>16</sup> A reflexive diary was also used by the researcher throughout the study.

Respondent validation was completed,<sup>17</sup> and no amendments or clarifications were needed.

Thematic Analysis (TA) is a flexible method for analysing different perspectives creating themes or patterns of meaning. Data was analysed using Braun and Clarke's<sup>18</sup> approach using the six phases of thematic analysis focusing on both semantic and latent features of the data. Themes and sub-themes were presented and considered alongside existing literature. Investigator triangulation was completed be-

**Table 2. Demographics of participants**

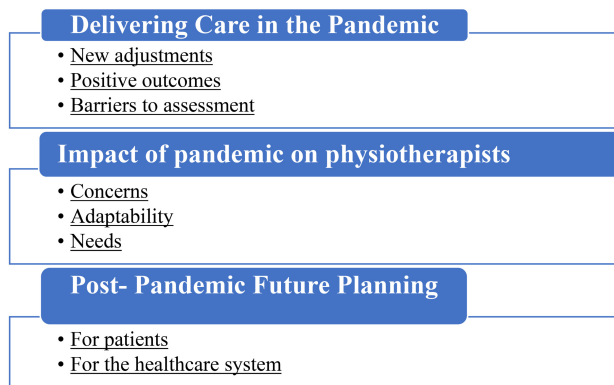
Participation Number (P)	Gender	Years of experience of working with adults with CF	Work Position	Location
1	Female	20	Lead physio	Scotland
2	Female	14	Band 7	England
3	Female	28	Lead physio	England

tween researcher and project supervisor to increase confirmability of findings.<sup>16</sup>

## RESULTS

All participants were females working across the UK (England and Scotland), with a mean of 20 years of working post-qualification and with expertise in delivering care to the CF population (Table 2).

The themes and sub-themes are shown in Figure 1.



**Figure 1. Themes and sub-themes.**

### *Theme 1: Delivering care in the pandemic*

Explores any alteration of delivering care during the pandemic, how the physiotherapists found the use of online means and any positive outcomes or barriers that physiotherapists faced working remotely.

### *Theme 2: Impact of pandemic on physiotherapists*

Narrates the pros and cons to how physiotherapists dealt with this new reality of a rapid change in service delivery during the pandemic, what they feel was gained and what is needed moving forwards.

### *Theme 3: Post-Pandemic Future Planning*

Explores aspects that physiotherapists feel could continue in the post-pandemic era, and the need for further progression in key aspects relating to remote provision, not only in relation to CF care but also for the wider healthcare system to best succeed in delivering high quality care.

## DELIVERING CARE IN THE PANDEMIC

### NEW ADJUSTMENTS

Regarding physiotherapy assessment, participants discussed adopting new ways of working. One such adjustment was the use of home spirometry, which has also been included in key guidelines updated for use during the pandemic.<sup>4</sup>

*"We need to know their lung function and if they are not coming to clinic, we need to get a different way. We bought loads of home spirometers, and we rolled them out as quickly as possible" (P2).*

*"Many of the patients have home spirometers which are one of the key ways we have got of seeing how somebody is*

*doing, measuring their lung function. They do their home spirometry over the video link" (P3).*

Furthermore, another assessment tool that was reported was the need to obtain a sputum sample via the post:

*"We have developed a way of trying to do postal sputum" (P3).*

The use of online exercise classes was reported, which also included online education sessions also.

*"We are also doing online exercise classes specifically for CF patients, so that is the biggest change, .....the virtual clinics and the fact that we offer an exercise class between three and four times a week" (P1).*

*".....doing a Facebook live exercise session, every week doing a different session that people can join in. She's [another senior physiotherapist] made videos for people and sent to them like if people had an individual need" (P2).*

A further realisation that prevailed among participants was how patients transitioning from paediatric to adult services could be best supported. Participants shared that to facilitate this transition an in-person visit in the home environment or attendance at a face-to-face clinic was being offered:

*"There is a new development and I have started doing home visits for transitional purposes with the paediatrics physio because all our transitional appointments were virtual in the beginning of the pandemic" (P1).*

*"We have a whole transition clinic, a special transition planning clinic, they come to us" (P2).*

## POSITIVE OUTCOMES

One major positive outcome was the increased number of patients who have been seen by online clinics, with participants reporting better patient attendance uptake than face-to-face clinics. This indicates that health care professionals during the pandemic had the opportunity to stay connected with their patients more easily compared to prior.

*"I think to a degree some of patients have attended more virtual clinics than would have attended face to face. Give us a bigger reach to those people who geographically aren't close to us" (P1).*

*"People that we have not seen for the longest time, we have seen regularly during the pandemic on the screen. So, it changed who we see in a clinic a little bit which is interesting. It allows us to provide our service to everybody and every corner" (P2).*

Other positive outcomes were the convenience with physiotherapists being able to work from home and the minimization of their worries regarding cross infections among patients with CF.

*"It is easier for me to deliver because I do not have to worry about the cross infection in the room" (P1).*

*"So, people have been able to work from home. I got given a laptop at the start of the pandemic which has enabled me to do a lot of my work from home. If I was sick, one of my children was sick. I could still log in and do a clinic*

*from home on my laptop, which is something that had never, ever been a possibility before" (P1).*

Additionally, the online platforms were felt to better facilitate people with CF being able to meet with each other online:

*"Peer support online, gives the CF patients an opportunity to have safe open discussion with their peer group, whereas they have not been allowed to have face to face before." (P1)*

## BARRIERS TO ASSESSMENT

The absence of hands-on clinical assessment was a recurrent barrier:

*"I mean as physiotherapist, I'm very used to doing hand on things. I can assess somebody's chest by listening to their chest, by putting my hands on feeling how it feels. It is really hard to tell if somebody's chest is sounding crackly or they're coughing a lot because you can't hear." (P3)*

Another disadvantage was the accuracy of results from home spirometers because the machines were not calibrated.

*"We're not calibrating these home spirometers; they're not being serviced. We don't know how accurate they are." (P2)*

The need to move to postal sputum samples was the result of the concern regarding the lack of in-person assessment and the inability to gain sputum samples otherwise to gain a full picture of patients' health:

*"Regular sputum samples from these patients to able to monitor how their chests are and how they are. Well, you can't do that when you're seeing somebody virtually." (P3)*

Continuing to the accuracy of results, another limitation that has been presented is that virtual examination might be less reliable compared to the in-person:

*"Now they can pretend that they are ok, that they've lost a lung function machine and their video is not working. I think if you can't see them, they can mask a lot of things. So, to a degree, it is less reliable." (P1)*

## IMPACT OF PANDEMIC ON PHYSIOTHERAPISTS

### CONCERNS

The first challenge that the physiotherapists faced was regarding the remote assessment, expressing worries in terms of safety.

*"Some safeguarding must be taken into consideration. So, if you come to my class and you don't want to be seen, it's ok for you to turn the video off but I need to be able to see you at the end. What happens if you collapse?" (P1)*  
*"There is still time when I see somebody online, I can't solve or advise them properly. I call a patient for the clinic, and they'll be sitting in their van on the side of the motor-*

*way somewhere. Trying to do a consultation in that situation. It is tricky." (P3)*

Furthermore, moving forward in the post-pandemic recovery, all participants expressed uncertainty regarding the future of CF care:

*"We have to sit together and work out a way through this. What's going to be the most efficient use of our time and the patients' time. Everything is about change at the minute, we're just managing change and working out the best way forward. It's a work in progress." (P2)*

*"Virtual intervention is not going to go away for some people, how best to manage virtual consultation would be useful to give individual confidence." (P1)*

*"We're still evolving our system and how we think the service is going to look in future because we really don't know. It's a very challenging time because we do not know what the future is. It's a really mixed picture." (P3)*

With the use of CF Transmembrane Conductance (CFTR) modulator therapies – designed to correct the malfunctioning protein made by the CFTR gene - prescribed to patients at the same time as the move to telehealth, participants expressed concern that the evaluation of outcomes is challenging:

*"Very difficult to evaluate telehealth properly given that the modulator came along at the same times as COVID." (P1)*

*"They both, COVID and Kaftrio, were at the same time and it's really hard to separate one from another. I do not know how you're going to pull that one from other because I think it's almost impossible." (P3)*

### ADAPTABILITY

A realisation among participants was that physiotherapists should be ready to cope with every change. The need for adaptability and resilience being key:

*"I think we've got to be ready for change and you know although the pandemic feels like it's over, there might be another one next year. We need to be adaptable and resilient." (P2)*

*"I always thought as physios, we were quite adaptable, we've had to be super adaptable. We, you know, we've been taken out of our roles. Then, we've had to come up with new ways of working. Adaptability is extremely key. We've just kept up and changed and grabbed hold of these new technologies and new ways of doing things." (P3)*

### NEEDS

Expressing their worries in delivering care, the uncertainty about the future, and the skills that they gained with this experience, participants also explained what they need to provide good quality care to CF patients from now on. The need for training in specific areas, now that online delivery of care seems to be part of the future in CF, were expressed:

*"For us in CF we didn't do group actively, so I haven't done any group exercises for a long time. It was quite challenging. I think some information around that is really good." (P1)*

"So, obviously, training is needed. I suppose if I saw something that looked relevant, I'd book into it, but I haven't come across anything that I feel would help me in my quest." (P2)

A guide or checklist regarding the remote assessment and the use of online means for consultation was also felt to be a useful development, especially for physiotherapists that have not worked in online clinics:

"So, having a kind of checklist that you go through, like a good guide for the novice physio that's never done it before, because I think it's different when you are more experienced, you've got more experience of a consultation, making an adaptation to an online one it's slightly easier than trying to as young, novice physio to be able to pick up all the things." (P1)

"There's a lot of information to let somebody know and I guess I've always been doing it; I probably don't think about the in's and out. It would be helpful to be a guideline for physios of what's expected of them and how things need to go. I'll be getting a new band 6 in June, so I don't think she's done CF in virtual clinics." (P2)

## POST-PANDEMIC FUTURE PLANNING

### FOR PATIENTS

All participants felt that moving forwards online clinics would prevail and that education of patients need to be in place to maximise patients' adherence and engagement:

"Preparing the area, make sure the patient is aware what equipment they need and making sure that it's a safety thing." (P1)

"We still very much want them to do those antibiotics, nebulizers. Trying to work hard to educate and support them. We still probably negotiate with them that the rest of the time, they have virtual because a lot of people if we go fully face-to-face would just never see them again. We've got to have a contract with them. They need to understand what we expect from them." (P2)

P3 also suggested that CF patients should visit the clinic in person at least once a year to have a full assessment:

"We're gradually trying to get all our CF patients to come back for annual review, once a year. They have lots of tests done, they see the whole team and you can only do that face to face."

### FOR THE HEALTHCARE SYSTEM

The major recommendation that emerged from all physiotherapists is the amelioration of online platforms to facilitate the process of delivering care:

"There's gonna be a lot about funding, putting the funding in place to develop the right infrastructure for remote care. What platforms do we use? How do we do it?" (P2)

"We've got to find a better way of monitoring somebody's chest and the microbiology in their chest. We need to develop more virtual services. Getting the patient to upload certain data like their weight, their lung function on to

some sort of virtual platform or cloud or something like that." (P3)

Similarly, it was added that apart from online platforms it is important to ensure the accuracy and the maintenance of lung function machines in patients' houses:

"Main means of surveillance is going to be remote. It's gonna be lung function machines in people's houses. And if we can't rely on them, we're gonna have a problem." (P2)

P1 also believed that physiotherapists should ensure the safety of the CF patients who use online means, especially in group activities suggesting that more physiotherapists should participate online:

"I can keep an eye on six people on the screen. Any more than six patients then two physios have to be in attendance. Small adjustments to ensure the safety of the patient when you're caring for them. Those are the things that we need to make sure we don't miss."

A suggestion that was put forward by all participants was the need for hybrid clinics as part of CF care moving forwards.

"I think we have to do possibly hybrid clinics. Do not lose sight of those people that need to see us on a face-to-face basis and don't blanket on telehealth." (P2).

"There still a need and a place for face-to-face clinics and we're never going to be able to do it all online, it will have to do a mixture of both." (P3)

The participants discussed how physiotherapists should select which patient they will see more in person or more virtually. Priority groups for the face-to-face clinics were felt to be patients transitioning from paediatrics to adult services and the patients who are not eligible for the CFTR modulators. The criteria should be personalized however to the needs of each patient with CF.

"It depends on the degree of disease progression of the individual. If a person had really poor lung function and had an increase in the frequency of exacerbation, and I was concerned about them, then I'd want to see them much more often. I think it has to be more precision medicine, and individualistic and you can't have a blanket four times a year. I think you have to be variable." (P1)

"For transition patients, we want their first couple visits to be face to face so they can come to the unit, see who we are. We've got a number of patients who weren't eligible for Kaftrio. I feel they are a priority group whom we should see in person." (P2)

## DISCUSSION

In delivering care remotely during the pandemic, participants explained that the use of online means was the predominant method for CF care during the pandemic, as echoed in the literature.<sup>9,19</sup> One adjustment that was highlighted by participants was the use of home spirometry, which was also included in NICE guidelines (2020)<sup>4</sup> published during the pandemic. The physiotherapists in this



study also discussed the benefits of online clinics. One major positive outcome that was stated was the increased number of patients that attended online, highlighting that this mode of clinical delivery enabled more patients with CF to attend regardless of their location and reduced the burden and costs associated with travelling to a face-to-face clinic. In line with the literature<sup>20-23</sup> the convenience of remote working was also a successful outcome that was identified in this study.

Participants in this study also expressed some limitations with the use of online clinics where the lack of opportunity for physical examination and visual cues were identified, and these limitations are also reported in the literature.<sup>20-23</sup> However, an interesting differentiation is that Gifford et al. (2020)<sup>24</sup> and Perkins et al. (2021)<sup>25</sup> reported that remote means allowed early identification of health issues in the CF population. This could be considered in contrast with the current study as the physiotherapists felt that the online assessment was less reliable compared to the in-person assessment. The low sample size in this study could however have resulted in this aspect not being reported.

Another disadvantage identified by participants was the accuracy of results from home spirometers as participants agreed that the home devices are not as sensitive as the ones in a hospital environment, and they are not calibrated. For this reason, it might lead to false or unrepresentative results. No further papers were identified investigating the accuracy of remote assessments in patients with CF, either before or during the pandemic and this is an area recommended for future research.

A concern that was also expressed by physiotherapists was the difficulty in evaluating outcomes as telehealth and the emergence of the CFTR modulator therapies occurred at the same time. Calls for more research is also recommended in the literature<sup>24</sup> on the evaluation of outcomes using telehealth and remote means for people who are prescribed CFTR modulator therapies.

A suggestion that was put forward by all participants was the need for hybrid clinics as part of CF care moving forwards. Perkins et al. (2021)<sup>25</sup> recognized that among clinicians some indicated that none or a few patients with CF, who have been assessed by online means, should have been evaluated in person. However, considering the transitioning of patients from paediatrics to adult services, the patients who are not eligible for CFTR modulators, and the related concerns from physiotherapists in this study regarding the perceived lack of reliability in virtual physiotherapy assessment, a hybrid clinic seems to be a more appropriate approach, compared to the use of only online clinics. More exploration is recommended concerning the type of clinics and interventions that should be used in CF care post-pandemic.

#### LIMITATION OF THIS STUDY

One limitation of this study is the transferability of the findings, as only three physiotherapists participated in total. Another aspect is that participants in this study had a mean of 20 years of working in delivering care to the CF population. To reflect a range of experience, it would be

useful to have included physiotherapists with less years of working in CF.

The recruitment strategy aimed to include physiotherapists from across the UK. Considering the small sample size this aim could not be fulfilled and does limit the ability to obtain experiences from a demographically diverse population from across the UK and across different health delivery systems.

#### CONCLUSIONS

During the last three years, the health care system has faced many changes in its operation because of the emergence of COVID-19. The experienced physiotherapists in this study stated that home spirometers, online classes and postal sputum were changes in the physiotherapy CF care model. Emphasizing that apart from the benefits of virtual clinics, some limitations need to be considered and improved moving forward. Specifically, the accuracy of assessment tools when used remotely should be further investigated to provide a reliable, full examination of patients with CF. Moreover, the concerns of physiotherapists regarding the safety of patients who use online means and the worries regarding the transitioning of children to adult clinics. Agreement across participants was that moving forwards there needs to be hybrid ways of working in place for providing care for people with CF. Areas for training and development were indicated, as were the need for investment in the infrastructure for online platforms.

Even though the findings of this study provide an exploration of experiences of physiotherapists in delivering CF care during the pandemic, and how post-pandemic CF care might be shaped, the small number of participants in this study may limit the transferability of the findings. Further research is recommended with a larger sample size, with representation from across the UK to further explore the post-pandemic CF model of care.

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#### FUNDING

No funding was received for this study.

#### KEY POINTS

1. Physiotherapists working during the COVID-19 pandemic treating patients with CF remotely reported the use of home spirometry, online classes and obtaining postal sputum samples were the significant changed in the care model.
2. The use of online clinics also saw improved patient attendance uptake in comparison to face-to-face clinic held pre-pandemic.

3. Moving forwards, hybrid ways of working are advised to support people with CF alongside the need for investment in the infrastructure for online platforms and recommendations are made for more research to investigate the use of remote assessment tools.

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